Review for Final Exam

MAT 0022C/0028

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate using the order of operations.

1) $30 - 2^2 + (-9) \div \sqrt{9}$ 1) _____

A) 6 B) 31 C) 23 D) 29

2) $4 - |9 - 8 \cdot 7| + (-7)^2 \div 7^2$ 2) _____

A) -42 B) -51 C) 42 D) 51

Simplify.

3) $25 - [5 - (2 - 9)] + (1 - 3)^3$ 3) _____

A) 35 B) -21 C) 5 D) 21

4) $\dfrac{16(-1) - (-7)(-9)}{2[-16 \div (-4 - 4)]}$ 4) _____

A) -19.75 B) -11.75 C) 19.75 D) undefined

Evaluate the expression for x = -2, y = 3, z = -4.

5) $15x - y^2$ 5) _____

A) -36 B) -39 C) -21 D) 24

6) $-2x - 3y + 3z$ 6) _____

A) 25 B) -7 C) -17 D) -12

Solve the equation.

7) $\frac{2}{5}x - \frac{1}{3}x = 5$ 7) _____

A) {-150} B) {150} C) {75} D) {-75}

Solve.

8) $-\frac{2}{3}x + 2x = \frac{6}{5}x + \frac{4}{5}$ 8) _____

A) {0} B) $\left\{\frac{4}{15}\right\}$ C) {6} D) $\left\{-\frac{12}{5}\right\}$

Solve the equation.

9) $-\frac{1}{2}y - (y + \frac{1}{4}) = \frac{1}{64}(y - 6)$ 9) _____

A) $\left\{\frac{10}{31}\right\}$ B) $\left\{-\frac{10}{97}\right\}$ C) $\left\{-\frac{2}{19}\right\}$ D) $\left\{\frac{22}{97}\right\}$

10) $\frac{1}{7}(x + 21) + \frac{1}{8}(x + 8) = x + 6$ 10) _____

A) $\left\{-\frac{448}{41}\right\}$ B) $\left\{-\frac{224}{41}\right\}$ C) $\left\{-\frac{112}{41}\right\}$ D) $\left\{-\frac{560}{41}\right\}$

Solve.

11) $8y + 1 = 9 - 9y$ 11) _____

A) $\left\{-\frac{17}{8}\right\}$ B) $\varnothing$ C) $\left\{\frac{17}{8}\right\}$ D) $\left\{\frac{8}{17}\right\}$

12) $-6b + 4 + 4b = -3b + 9$ 12) _____

A) {9} B) $\varnothing$ C) {5} D) {-4}

13) $8x - (6x - 1) = 2$ 13) _____

A) $\left\{-\frac{1}{2}\right\}$ B) $\left\{\frac{1}{14}\right\}$ C) $\left\{\frac{1}{2}\right\}$ D) $\left\{-\frac{1}{14}\right\}$

14) $7x + 3(-2x - 3) = -6 - 2x$ 14) _____

A) {- 5} B) {- 1} C) {15} D) {1}

Solve the literal equation for the specified variable.

15) $4x + 9y = 4$ for y 15) _____

A) $y = \frac{4x - 4}{9}$ B) $y = \frac{-4x - 4}{9}$ C) $y = -36x + 36$ D) $y = \frac{-4x + 4}{9}$

Solve the formula for the specified variable.

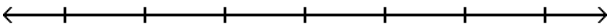
16) $A = \frac{1}{2}h(b_1 + b_2)$ for b_1 16) _____

A) $b_1 = \frac{2A - (h)(b_2)}{h}$ B) $b_1 = \frac{A - h(b_2)}{2h}$

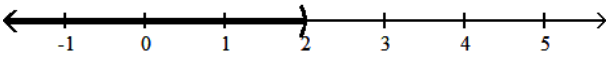
C) $b_1 = \frac{(b_2)2A - h}{h}$ D) $b_1 = \frac{h(b_2) - 2A}{h}$

Solve the inequality. Write the solution set in interval notation and graph it.

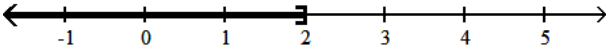
17) $12x - 14 > 2(5x - 5)$ 17) _____



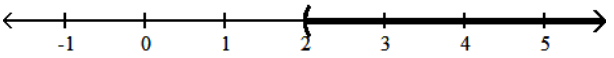
A) $(-\infty, 2)$



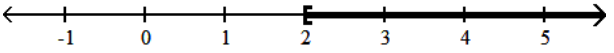
B) $(-\infty, 2]$



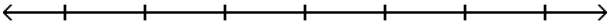
C) $(2, \infty)$



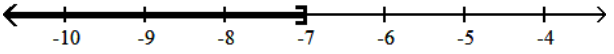
D) $[2, \infty)$



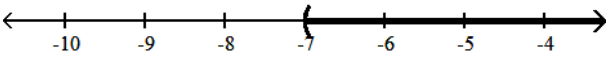
18) $-16r + 16 \le -4(3r - 11)$ 18) _____



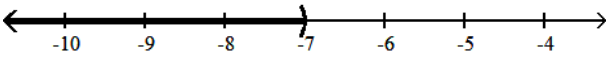
A) $(-\infty, -7]$



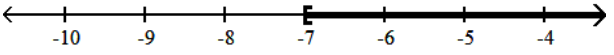
B) $(-7, \infty)$



C) $(-\infty, -7)$



D) $[-7, \infty)$



Write the sentence as an equation. Use x to represent "a number."

19) Seven subtracted from twice a number gives 17. 19) _____

A) $7 - 2x = 17$ B) $2(x - 7) = 17$ C) $7(2 - x) = 17$ D) $2x - 7 = 17$

Solve.

20) Six times some number, added to 3, amounts to -15 added to the product of 3 and the number. Find the number. 20) _____

A) -6 B) 18 C) -18 D) 6

21) Find the amount of discount when the original price is \$39.00 and the discount rate is 45%. 21) _____

A) \$17.55 B) \$21.45 C) \$1.76 D) \$37.24

22) Find the original price when the discount rate is 65% and the amount of discount is $409.50. 22) _____

A) $630.00 B) $6.30 C) $266.18 D) $26,617.50

Solve the problem.

23) The regular price of a double roll of wallpaper is $20. During a May sale, wallpaper was discounted 25%. What was the sale price of a double roll of wallpaper? 23) _____

A) $6.00 B) $15.00 C) $16.00 D) $5.00

24) The regular price of a ring is $754.50. During a May jewelry sale, the ring was discounted 40%. What was the sale price of the ring? 24) _____

A) $301.80 B) $302.80 C) $453.70 D) $452.70

Simplify.

25) $m^{17} \cdot m^{20}$ 25) _____

A) 37m B) m^3 C) m^{37} D) m^{340}

Use a combination of rules for exponents to simplify. Write answers with only positive exponents. Assume that all variables represent nonzero real numbers.

26) $t^{-6} \cdot t^5 \cdot t^{-8}$ 26) _____

A) $\frac{1}{t^{19}}$ B) $\frac{1}{t^9}$ C) t^{19} D) t^9

Simplify the expression. Use positive exponents. Assume variables represent nonzero real numbers.

27) $(4p^4s^4)^2(s^3)$ 27) _____

A) $16p^6s^9$ B) $16p^8s^{11}$ C) $4p^8s^{11}$ D) $16p^6s^{24}$

Simplify the expression.

28) $(-r^2s)^2(-r^4s^2)^5$ 28) _____

A) $r^{24}s^{12}$ B) $-r^{24}s^{12}$ C) $-r^{-16}s^{12}$ D) $-r^{1028}s^{34}$

Simplify by writing the expression with positive exponents. Assume that all variables represent nonzero real numbers.

29) $\left(\frac{tz^{-4}}{t^{-2}z}\right)^{-3}$ 29) _____

A) $\frac{t^{12}}{z^6}$ B) $\frac{t^{15}}{z^9}$ C) $\frac{z^{12}}{t^6}$ D) $\frac{z^{15}}{t^9}$

30) $\left(\frac{4p^{-3}q}{3^{-1}m^3}\right)^2$ 30) _____

A) $\left(\frac{144q^6q}{m^6}\right)$ B) $\left(\frac{12}{p^6m^6}\right)$ C) $\left(\frac{12q^2}{p^3m^3}\right)$ D) $\left(\frac{144q^2}{p^6m^6}\right)$

Convert the given number to scientific notation.

31) 0.00006508 31) _____

A) 6.508×10^{-4} B) 6.508×10^5 C) 6.508×10^4 D) 6.508×10^{-5}

32) 670,000 32) _____

A) 6.7×10^{-5} B) 6.7×10^{-4} C) 6.7×10^{4} D) 6.7×10^{5}

Add or subtract.

33) $(3x^2 + 7x - 5) + (4x^2 - 11x + 11)$ 33) _____

A) $7x^2 - 18x + 6$ B) $7x^2 + 4x + 6$ C) $7x^2 - 4x + 6$ D) $7x^2 - 4x + 16$

34) $(5x^8 + 4x^7 - 5x^6 - 6) - (3x^8 - 6x^7 + 9x^6 - 2)$ 34) _____

A) $8x^8 - 2x^7 + 4x^6 - 8$ B) $2x^8 + 2x^7 - 4x^6 - 8$

C) $8x^8 - 2x^7 + 4x^6 - 4$ D) $2x^8 + 10x^7 - 14x^6 - 4$

Complete the factoring.

35) $5x^2 - 45x = 5x(\quad)$ 35) _____

A) $9 - x^2$ B) $x - 9$ C) $9 - x$ D) $x^2 - 9$

36) $7x^2y^4 + 21x^2y^3 = 7x^2y^3(\quad)$ 36) _____

A) $7y + 3x$ B) $x^2y + 3$ C) $y + 3x^2$ D) $y + 3$

Find the product.

37) $(3x + 8)(x + 5)$ 37) _____

A) $x^2 + 40x + 23$ B) $3x^2 - 31x + 40$ C) $x^2 + 23x - 31$ D) $3x^2 + 23x + 40$

Multiply.

38) $(4x - 2)(4x - 2)$ 38) _____

A) $4x^2 - 16x - 17$ B) $16x^2 - 16x + 4$ C) $4x^2 - 17x + 4$ D) $16x^2 + 4x - 16$

Factor the GCF out of the given expression.

39) $4t^2 - 20t - 12$ 39) _____

A) $4(t^2 - 16t - 8)$ B) $4(t^2 - 5t - 3)$ C) $4t(t^2 - 5t - 3)$ D) $4(t^2 - 20t - 12)$

40) $24m^9 + 48m^5 + 36m^3$ 40) _____

A) $m^3(24m^6 + 48m^2 + 36)$ B) $12m(2m^9 + 4m^5 + 3m^3)$

C) $12m^3(2m^6 + 4m^2 + 3)$ D) $12(2m^9 + 4m^5 + 3m^3)$

Which is a factor of:

41) $x^2 - 25$ 41) _____

A) $(x + 5)$ B) $(x - 10)$ C) $(x^2 + 5)$ D) prime

42) $144k^2 - 169m^2$ 42) _____

A) prime B) $(144k + m)$ C) $(k - 169m)$ D) $(12k - 13m)$

Which is factor of:

43) $15x^2 - 10x - 12x + 8$ 43) _____

A) $(5x + 4)$ B) $(3x + 2)$ C) $(5x - 4)$ D) $(15x + 4)$

44) $20x^2 - 16xy - 25xy + 20y^2$ 44) _____

A) $(5x + 4y)$ B) $(20x - 5y)$ C) $(4x + 5y)$ D) $(5x - 4y)$

Which is factor of:

45) $x^2 - 7x - 60$ 45) _____

A) $(x - 5)$ B) $(x + 5)(x - 12)$ C) Prime D) $(x + 12)$

46) $u^2 - 6uv - 27v^2$ 46) _____

A) $(u + 3v)(u - 9v)$ B) $(u + 9v)$ C) $(u + v)$ D) $(u - 3v)$

Solve the equation.

47) $9d^2 + 24d + 12 = 0$ 47) _____

A) $-\frac{1}{2}, -\frac{2}{3}$ B) $2, \frac{2}{3}$ C) $\frac{1}{2}, \frac{3}{2}$ D) $-2, -\frac{2}{3}$

48) $15b^2 + 34b + 13 = -2$ 48) _____

A) $\frac{3}{5}, \frac{5}{3}$ B) $\frac{5}{3}, \frac{3}{5}$ C) $-\frac{5}{3}, -\frac{3}{5}$ D) $-\frac{3}{5}, -\frac{3}{5}$

Simplify the rational expression. (Assume the denominator is nonzero.)

49) $\frac{x^2 + 5x - 14}{x^2 + 14x + 49}$ 49) _____

A) $\frac{5x + 14}{14x - 14}$ B) $\frac{5x - 14}{14x + 49}$ C) $\frac{x - 2}{x + 7}$ D) $-\frac{x^2 + 5x - 14}{x^2 + 14x + 49}$

50) $\frac{x^2 - 81}{x - 9}$ 50) _____

A) $x + 9$ B) $x - 9$ C) $\frac{1}{x + 9}$ D) $x + 81$

Add or subtract. Assume all variables represent nonnegative real numbers.

51) $7\sqrt{72} + 3\sqrt{18}$ 51) _____

A) $33\sqrt{2}$ B) $-51\sqrt{2}$ C) $51\sqrt{2}$ D) $-33\sqrt{2}$

52) $\sqrt{3} - 4\sqrt{75} + 2\sqrt{48}$ 52) _____

A) $-2\sqrt{3}$ B) $-11\sqrt{126}$ C) $-2\sqrt{126}$ D) $-11\sqrt{3}$

Simplify the radical expression. Assume all variables represent nonnegative real numbers.

53) $\sqrt{72x^2}$ 53) _____

A) $6x\sqrt{2}$ B) $6x$ C) $72x$ D) $6\sqrt{2x}$

54) $\sqrt{75k^7q^8}$ 54) _____

A) $5k^7q^8\sqrt{3k}$ B) $5k^3q^4\sqrt{3k}$ C) $5k^3q^4\sqrt{3}$ D) $5k^2q^4\sqrt{3k}$

Multiply. Assume all variables represent nonnegative real numbers.

55) $\sqrt{5}(\sqrt{3} - \sqrt{7})$ 55) _____

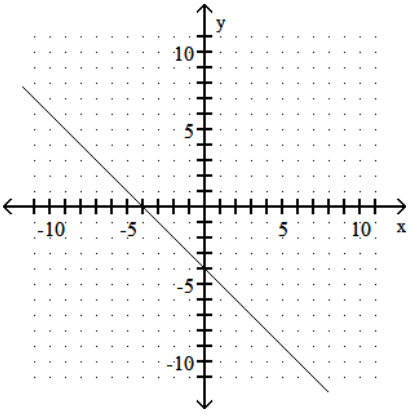
A) $\sqrt{50}$ B) $10\sqrt{5}$ C) $5\sqrt{3} + 5\sqrt{7}$ D) $\sqrt{15} - \sqrt{35}$

56) $6\sqrt{5}(3\sqrt{5} - 2\sqrt{55})$ 56) _____

A) $90 - 12\sqrt{275}$ B) $90 - 60\sqrt{11}$ C) $-90 - 60\sqrt{11}$ D) $90 + 60\sqrt{11}$

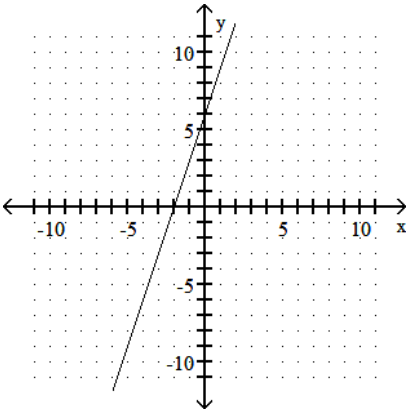
Find the slope of the line. If the slope is undefined, state this.

57) 57) _____



A) 4 B) 1 C) -1 D) -4

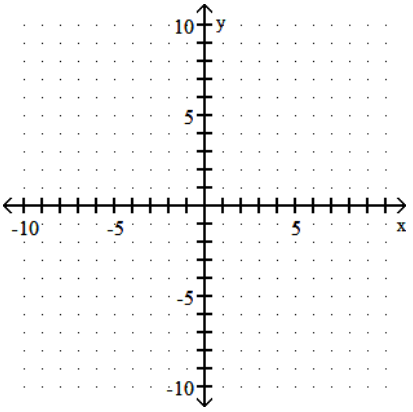
58) 58) _____



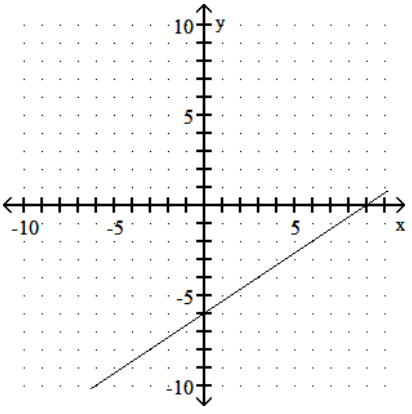
A) $\frac{1}{3}$ B) -3 C) $-\frac{1}{3}$ D) 3

Find the intercepts, and then graph the line.

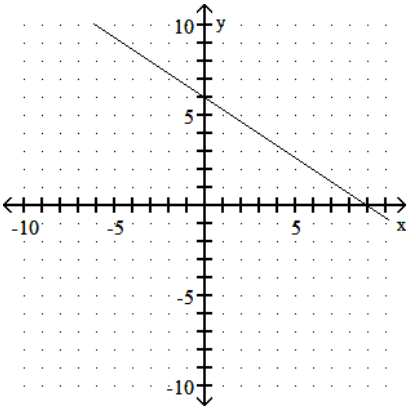
59) $2x - 3y = 18$ 59) _____



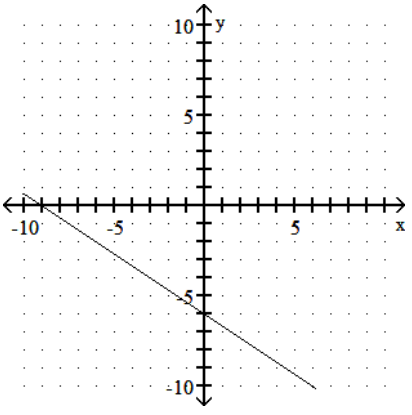
A) (0, -6), (9, 0)



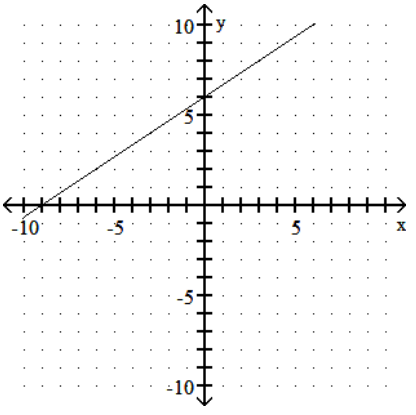
B) (0, 6), (9, 0)



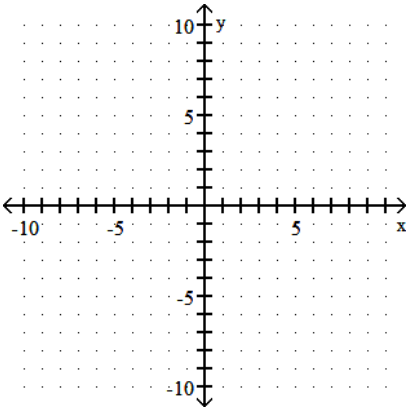
C) (0, -6), (-9, 0)



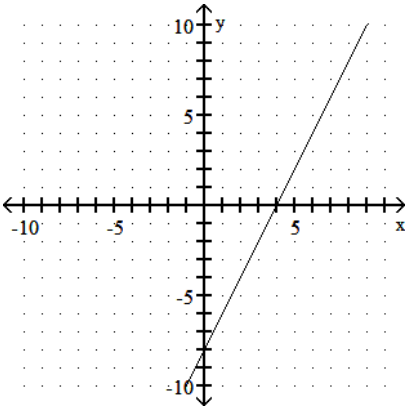
D) (0, -9), (6, 0)



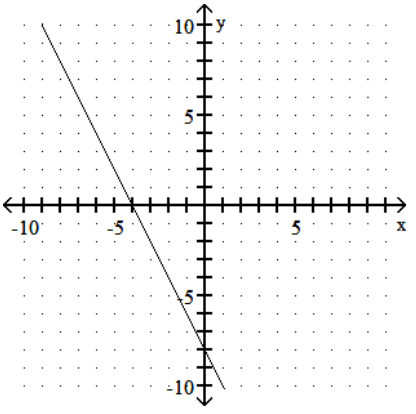
60) $2x - y = 8$ 60) _____



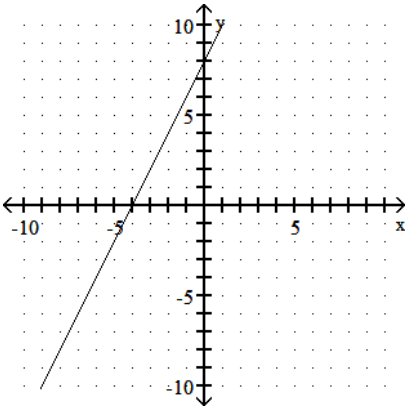
A) (0, -8), (4, 0)



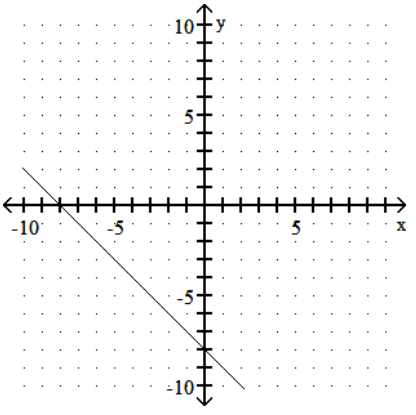
B) (0, -8), (-4, 0)



C) (0, -4), (8, 0)



D) (0, -8), (-8, 0)



Answer Key for Final Review

1) C
2) A
3) C
4) A
5) B
6) C
7) C
8) C
9) B
10) C
11) D
12) C
13) C
14) D
15) D
16) A
17) C
18) D
19) D
20) A
21) A
22) A
23) B
24) D
25) C
26) B
27) B
28) B
29) D
30) D
31) D
32) D
33) C
34) D
35) B
36) D
37) D
38) B
39) B
40) C
41) A
42) D
43) C
44) D
45) B
46) A
47) D
48) C
49) C
50) A

51) C
52) D
53) A
54) B
55) D
56) B
57) C
58) D
59) A
60) A